BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

REMARKS

By way of the instant amendment, claims 1-13, 15, 27 and 28 have been cancelled. Thus, claims 14 and 16-26 remain for examination.

The specification has been amended to correct minor errors noted therein and to attend to the objections set forth in paragraph 2 of the outstanding office action. One of ordinary skill in the art would readily recognize that the abbreviation MW stands for megawatts. The specification has been amended accordingly. No new matter has been added.

Claim 14 has been amended in order to overcome the § 112 rejection as set forth in paragraph 4 of the outstanding office action. In particular, the subject matter of claim 15 has been incorporated into claim 14.

The various § 112 rejections as stated in paragraph 6 of the outstanding office action have also been corrected. It is submitted that all of applicant's claims fully comply with the provisions of 35 U.S.C. § 112.

Claims 14-17, 21, 23 and 25-26 stand rejected under 35 U.S.C. § 102(b) as anticipated by Sato (5,051,397). Claims 14-17, 21 and 25-26 further stand rejected under 35 U.S.C. § 102(b) as anticipated by Fujikama (5,358,929). Finally, claims 14-19 and 23-26 stand rejected under 35 U.S.C. § 102(b) as anticipated by Sato (5,949,131).

Claims 14 is the sole remaining independent claim in the application. Claim 14 has been amended in order to more particularly distinguish applicant's invention from the applied references of record, in particular, Sato '397, Fujimaki and Sato '131. In particular, claim 14 has been amended to recite that the first and second oxide wires each comprise superconducting filaments surrounded by a sheath. Support for such disclosure is found in the first paragraph under the description of examples 1 and 2. Moreover, applicant's independent claim 14 has been amended to recite that the junction which is formed by superimposing the end portions of the first and second oxide superconducting wires with each other is done without removing the sheath therefrom. These claim amendments serve to distinguish applicant's invention from the prior art.

The examiner's attention is directed to attached Fig. A which illustrates the difference between the present invention and the applied Sato '397, Fujimaki and Sato

'131 references. In accordance with applicant's invention, the junction formed by superimposing the end portions of the wires is done without removing the surrounding sheath from the superconducting filaments. In contrast, all of the references applied by the examiner show examples of removing portions of the sheath of one or more of the wires so that the exposed superconducting filaments are directly bonded together.

In applicant's invention, on the other hand, it is not necessary to remove the sheath from the wires although the junction is worked by superimposing or cutting the end portions to have a desired shape. The structure of the superconducting filaments is not destroyed by the working of the junction and, as a result, the present invention attains a high electric conductivity throughout the junction.

The amendments pointed out above with regard to applicant's sole independent claim 14 readily distinguish applicant's invention from the applied prior art and render claim 14 patentable thereover. Since claim 14 defines structural features not disclosed in the prior art references, these references may not be applied in a § 102 rejection and the rejection must be withdrawn.

Applicant's dependent claims depend directly or indirectly on the sole independent claim 14 and are likewise deemed patentable at least for the same reasons indicated above with regard to claim 14.

With regard to the Information Disclosure Statement filed together the filing of the application on July 3, 2001, applicant has noted an error in that reference A1 should not have been listed. Indeed reference A1 corresponds to applicant's PCT filing of November 1, 2000 (PCT/JP 00/07711) and thus corresponds to applicant's priority document and is not prior art. The examiner is requested to scratch through this reference on the previously submitted 1449 form so that it would not be listed as a reference cited on the first page of the issued patent in connection with the above application. The examiner is further requested to return a copy of the 1449 form showing this reference removed by such strikethrough.

Application has not received any communication with regard to approval of the drawings filed together with the application on July 3, 2001. The examiner is requested to provide notice of approval of the formal drawings previously filed.

The application is now considered to be in condition for allowance and an early indication of same is earnestly solicited.

Respectfully submitted,

Date: 27 Nov 02

By Ronald Coslett 36,469

FOLEY & LARDNER
Washington Harbour
3000 K Street, N.W., Suite 500
Washington, D.C. 20007-5109
Telephone:(202) 672-5407
Facsimile:(202) 672-5399

David A. Blumenthal
Attorney for Applicant
Registration No. 26,257

Atty. Dkt. No. 017700-0149

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Naoki AYAI et al

Title: METHOD OF MANUFACTURING OXIDE SUPERCONDUCTING WIRE, OXIDE SUPERCONDUCTING WIRE, SUPERCONDUCTING COIL AND SUPERCONDUCTING APPARATUS

Appl. No.: 09/869,701

Filing Date: 07/03/01

Examiner: Andrew T. Piziali

Art Unit: 1775

MARKED-UP COPY OF AMENDMENT IN REQUEST FOR RECONSIDERATION UNDER 37 C.F.R. § 1.111

Commissioner for Patents
Box Non-Fee Amendment
Washington, D.C. 20231

Sir:

In reply to the Office Action mailed August 30, 2002, please amend the above identified application as follows:

IN THE WRITTEN DESCRIPTION

On page 1, paragraph beginning at line 20, delete and replace as follows:

In general, a sufficient length is required ~~to~~for an oxide superconducting wire employed in a practical superconducting apparatus. In order to manufacture a cable conductor having a capacity of at least 100 megawatts (MW) as a practical superconducting cable, for example, hundreds of oxide superconducting wires exhibiting a unit length of about 5 km as the final length of the superconducting cable are required. In this case, a wire (diameter: 0.9 mm, critical current: 20 A, temperature: 77 K) formed by bismuth oxide superconductor filaments coated with silver is employed as the oxide superconducting wire, for example.

1 DeltaView comparison of iManage://LAXDMS1/LACA/562804/1 and iManage://LAXDMS1/LACA/562804/2. Performed on 11/15/02.

On page 2, paragraph beginning at line 4, delete and replace as follows:

At the current level of the technique of manufacturing an oxide superconducting wire, however, only a wire formed by bismuth oxide superconductor filaments coated with silver having a unit length of about several 100 m is manufactured. When the oxide superconducting wire of such a unit length has a single defective portion, the entire oxide superconducting wire of about several 100 m is regarded as defective, to disadvantageously result in a low manufacturing yield. Unless a technique of manufacturing an elongated oxide superconducting wire is developed, therefore, it is impossible at present to apply the current technique to the aforementioned practical superconducting apparatus. This is one of the primary factors for delay in the application of ~~the~~ superconducting apparatus, which is an innovative technique, to industry and practical application thereof.

On page 2, paragraph beginning at line 17, delete and replace as follows:

If a wire having a large unit length can be manufactured by connecting relatively short oxide superconducting wires with each other in order to implement the aforementioned superconducting cable having a capacity of at least 100 MW or a superconducting magnet employed for a magnetic field generator, it is possible to prepare a prototype apparatus for applying a superconducting apparatus to industry. Further, it is possible to ~~grasp~~understand the merits of the superconducting apparatus through the prepared prototype apparatus for ~~progressing~~progress in practical application.

On page 2, paragraph beginning at line 25, delete and replace as follows:

However, the critical current of an oxide superconducting wire is disadvantageously reduced due to influence by strain resulting from deformation such as bending or tension. When end portions of oxide superconducting wires having a small unit length are superposed for connecting the oxide superconducting wires with each other by brazing or soldering, for example, the wires are bent through a guide roller or the like in the process of manufacturing a superconducting cable or a superconducting magnet and the critical current is reduced due to bending strain applied to the wires. This is because the junction formed by superposing the end portions with each other is hardly bent while the remaining portions are readily bent ~~and hence~~. Hence an end of the junction is bent with a ~~bend~~bending radius smaller

2 DeltaView comparison of iManage://LAXDMS1/LACA/562804/1 and iManage://LAXDMS1/LACA/562804/2. Performed on 11/15/02.

than the radius of the guide roller or the like when the end of the junction is bent through the guide roller or the like ~~and~~. As a result, a strain larger than an allowable bending strain for allowing the wires to maintain the critical current is applied to the end of the junction ~~to readily cause concentration of strain~~. Even if an oxide superconducting wire having a large unit length can be obtained by connecting the wires, therefore, the critical current is reduced due to influence by the strain applied to the end of the junction of the wire and hence it is disadvantageously difficult for a practical superconducting apparatus formed by the long wire to attain a prescribed function.

On page 11, paragraph beginning at line 13, delete and replace as follows:

(13) As shown in Fig. 9, a junction between oxide superconducting wires 1 and 2 is partially or entirely coated with tape-like materials ~~41~~42 consisting of polyimide, copper, silver or the like.

3 DeltaView comparison of iManage://LAXDMS1/LACA/562804/1 and iManage://LAXDMS1/LACA/562804/2. Performed on 11/15/02.

IN THE CLAIMS

Please cancel claims 1-13, 15, 27 and 28.

14. (Amended) An oxide superconducting wire comprising:

a first oxide superconducting wire (1) having an end portion;

a second oxide superconducting wire (2) having an end portion; and

said first and second oxide wires each comprising superconducting filaments surrounded by a sheath;

a junction ~~(L)~~ formed by superposing the end portions of said first and second oxide superconducting wires ~~(1, 2)~~ with each other without removing said sheath therefrom, wherein ~~the quantity of strain on an end of~~ said ~~junction (L) is reduced to be close to the quantity of strain on non-superposed portions of said first and second oxide superconducting wires (1, 2).~~ said junction (L) includes a brazing filler metal (3) interposed between superposed said end portions of said first and second oxide superconducting wires ~~(1, 2)~~.

16. The oxide superconducting wire according to claim ~~15,~~ 14, wherein said oxide superconducting wires ~~(1, 2)~~ are tape-~~like~~shaped wires having rectangular cross sections.

17. (Amended) The oxide superconducting wire according to claim 16, wherein said junction ~~(L)~~ includes a junction formed by superposing wide surfaces of two said tape-~~like~~shaped wires.

18. (Amended) The oxide superconducting wire according to claim 17, wherein at least one of said ~~junction (L) includes an~~ end ~~portion~~portions ~~(11a, 11b, 21a, 21b)~~ is so worked that the ~~widths~~width (W) of said ~~tape-like wires are~~at least one of said end portions is reduced toward the end.

20. (Amended) The oxide superconducting wire according to claim 18, wherein said junction ~~(L)~~ includes an end portion ~~(11b, 21b)~~ having an end surface inclined in the width direction across the widths of said tape-~~like~~shaped wires.

21. (Amended) The oxide superconducting wire according to claim 17, wherein at least one of said ~~junction (L) includes an~~ end ~~portion~~portions ~~(12, 22)~~ is so

 DeltaView comparison of iManage://LAXDMS1/LACA/562804/1 and iManage://LAXDMS1/LACA/562804/2. Performed on 11/15/02.

worked that the thicknesses ~~(T)~~ of said ~~tape-like wires are~~at least one of said end portions is reduced toward the distal end thereof.

5 DeltaView comparison of iManage://LAXDMS1/LACA/562804/1 and iManage://LAXDMS1/LACA/562804/2. Performed on 11/15/02.